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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/582,387	06/09/2006	Takaharu Oi	2006_0908A	3876
513 7590 12/12/2008 WENDEROTH, LIND & PONACK, L.L.P. 2033 K STREET N. W. SUITE 800 WASHINGTON, DC 20006-1021			EXAMINER MINSKEY, JACOB T	
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/582,387

**Applicant(s)**

OI ET AL.

**Examiner**

JACOB T. MINSKEY

**Art Unit**

4151

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 09 June 2006.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 7-26 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 7-26 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 09 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO/CIS)  
Paper No(s)/Mail Date 06/09/2006  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim 7 is rejected under 35 U.S.C. 102(b) as being anticipated by Kazunori, JP 05-269783.
3. Regarding claim 7, Kazunori teaches a method for manufacturing a hollow model having a hollow part (see abstract) having at least one opening communicating with an outside (see figure 1), comprising: a core article forming process comprising a padding forming process for forming a padding made of a foamed material (B) (figure 1 item 1, see abstract and [0021, 0025]) and having a size acceptable to the hollow part and a film forming process for applying a film forming component (A) [0022] on the padding in order to form a film having an external form similar to said hollow part [0021-0026]; a hollow model forming process that said core article formed in the core article forming process is set in a mold for forming an external form of the hollow model (described in [0021-0026], two- component reaction rapid curing type urethane liquid resin (D) [0011] is injected into an interstice between them to be cured, and then the hollow model having the core article inside thereof is formed by demolding (described in [0021-0026] and [0033-0035]); a padding removing process that organic solvent (E)

[0024] is injected into the film comprising the film forming component (A) to dissolve and remove the padding comprising the foaming material (B); and a film removing process that the film from which the padding was removed is pulled up through the opening to remove (described in [0051-0057]).

4. Claims 12, 14, 17, and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Viteriku et al, JP 2000-210755.

5. Claims 12, 14, 17, and 22 are product by process claims, see MPEP § 2113. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself (i.e., differences in product characteristics), and not on its method of production. In the present instance, all that is claimed is a precious molding, which is shown by Viteriku et al (investment casting, abstract and [0005]).

#### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
9. Claims 8, 9, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kazunori, JP 05-269783.
10. Regarding claim 8, Kazunori remains as applied in claim 7 and further teaches that said film forming component (A) is preferably flexible reaction curing urethane [0022] for injection, and said foaming material (B) is preferably expanded polystyrene [0025].
11. Kazunori does not explicitly teach that the urethane has a Shore hardness A of 50 to 90, but the use of additives and adjustments to the material to control the properties of the material is taught.

12. It would have been obvious to one of ordinary skill in the art at the time of the invention to use a urethane with the claimed shore hardness level for the benefit of creating a film that is not easily deformed in the foaming and removal process

13. Regarding claim 9, Kazunori remains as applied in claim 8 and further teaches that said two-component reaction curing type urethane liquid resin for injection (D) [0011] consists of multi-functional polyol component (F) (unsaturated polyester [0012]), multi-functional polyisocyanate component (G)[0012] and a plasticizer (H)[0011], and said plasticizer (e) is micro-dispersed through phase separation within 5 minutes of a working life [0040-0043].

14. Kazunori teaches the addition of catalyst or agent into a RIM mixing head [0041], and the ability to control the flow to meet the desired transfer speed of the material [0042]. Kazunori also teaches that the cycle time of the mixing head can be adjusted to less than 5 minutes. It would have been obvious to one of ordinary skill in the art at the time of the invention to use Kazunori's teachings to optimize the mixing speed of the additives in the material.

15. Regarding claim 19, Kazunori remains as applied in claim 7 and further teaches that said two-component reaction curing type urethane liquid resin for injection (D) [0011] consists of multi-functional polyol component (F) (unsaturated polyester [0012]), multi-functional polyisocyanate component (G)[0012] and a plasticizer (H)[0011], and said plasticizer (e) is micro-dispersed through phase separation within 5 minutes of a working life [0040-0043].

16. Kazunori teaches the addition of catalyst or agent into a RIM mixing head [0041], and the ability to control the flow to meet the desired transfer speed of the material [0042]. Kazunori also teaches that the cycle time of the mixing head can be adjusted to less than 5 minutes. It would have been obvious to one of ordinary skill in the art at the time of the invention to use Kazunori's teachings to optimize the mixing speed of the additives in the material.

17. Claims 10-11, 13, 15, 16, 18, 20, 21, and 23-26 rejected under 35 U.S.C. 103(a) as being unpatentable over Kazunori, JP 05-269783 in view of Nakamura et al, US patent publication 2003/0225239.

18. Regarding claim 10, Kazunori remains as applied in claim 9 and further teaches that said two-component reaction curing type urethane liquid resin (D) [0011], but does not teach a minute particulate wax component (I) and a very small quantity of moisture (J) at a specific rate to be foamed urethane containing contributed wax minute particles.

19. In the same field of endeavor of urethane molding, Nakamura et al teach said two-component reaction curing type urethane liquid resin (D) [0207] with a minute particulate wax component (I) [0168] and a very small quantity of moisture (J) at a specific rate to be foamed urethane containing contributed wax minute particles [0168].

20. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine Nakamura's addition of wax and moisture in the Kazunori method for the benefit of using fillers as additives to control the properties of the material.

21. Regarding claim 11, Kazunori and Nakamura remain as applied in claim 10, and while Kazunori does not explicitly teach a precious molding method by a lost wax

method characterized by using said hollow model manufactured by a method for manufacturing a hollow model according to claim 10, it would have been obvious to use the hollow model for such a purpose. (An example of this use is shown by Viteriku et al in JP 2000-210755 (investment casting, abstract and [0005])).

22. Regarding claim 13, Kazunori and Nakamura remain as applied in claim 9, and while Kazunori does not explicitly teach a precious molding method by a lost wax method characterized by using said hollow model manufactured by a method for manufacturing a hollow model according to claim 9, it would have been obvious to use the hollow model for such a purpose. (An example of this use is shown by Viteriku et al in JP 2000-210755 (investment casting, abstract and [0005])).

23. Regarding claim 15, Kazunori remains as applied in claim 8 and further teaches that said two-component reaction curing type urethane liquid resin (D) [0011], but does not teach a minute particulate wax component (I) and a very small quantity of moisture (J) at a specific rate to be foamed urethane containing contributed wax minute particles.

24. In the same field of endeavor of urethane molding, Nakamura et al teach said two-component reaction curing type urethane liquid resin (D) [0207] with a minute particulate wax component (I) [0168] and a very small quantity of moisture (J) at a specific rate to be foamed urethane containing contributed wax minute particles [0168].

25. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine Nakamura's addition of wax and moisture in the Kazunori method for the benefit of using fillers as additives to control the properties of the material.



26. Regarding claim 16, Kazunori and Nakamura remain as applied in claim 15, and while Kazunori does not explicitly teach a precious molding method by a lost wax method characterized by using said hollow model manufactured by a method for manufacturing a hollow model according to claim 15, it would have been obvious to use the hollow model for such a purpose. An example of this use is shown by Viteriku et al in JP 2000-210755 (investment casting, abstract and [0005]).

27. Regarding claim 18, Kazunori and Nakamura remain as applied in claim 8, and while Kazunori does not explicitly teach a precious molding method by a lost wax method characterized by using said hollow model manufactured by a method for manufacturing a hollow model according to claim 8, it would have been obvious to use the hollow model for such a purpose. An example of this use is shown by Viteriku et al in JP 2000-210755 (investment casting, abstract and [0005]).

28. Regarding claim 20, Kazunori remains as applied in claim 19 and further teaches that said two-component reaction curing type urethane liquid resin (D) [0011], but does not teach a minute particulate wax component (I) and a very small quantity of moisture (J) at a specific rate to be foamed urethane containing contributed wax minute particles.

29. In the same field of endeavor of urethane molding, Nakamura et al teach said two-component reaction curing type urethane liquid resin (D) [0207] with a minute particulate wax component (I) [0168] and a very small quantity of moisture (J) at a specific rate to be foamed urethane containing contributed wax minute particles [0168].

30. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine Nakamura's addition of wax and moisture in the Kazunori method for the benefit of using fillers as additives to control the properties of the material.

31. Regarding claim 21, Kazunori and Nakamura remain as applied in claim 20, and while Kazunori does not explicitly teach a precious molding method by a lost wax method characterized by using said hollow model manufactured by a method for manufacturing a hollow model according to claim 20, it would have been obvious to use the hollow model for such a purpose. An example of this use is shown by Viteriku et al in JP 2000-210755 (investment casting, abstract and [0005]).

32. Regarding claim 23, Kazunori and Nakamura remain as applied in claim 19, and while Kazunori does not explicitly teach a precious molding method by a lost wax method characterized by using said hollow model manufactured by a method for manufacturing a hollow model according to claim 19, it would have been obvious to use the hollow model for such a purpose. An example of this use is shown by Viteriku et al in JP 2000-210755 (investment casting, abstract and [0005]).

33. Regarding claim 24, Kazunori remains as applied in claim 7 and further teaches that said two-component reaction curing type urethane liquid resin (D) [0011], but does not teach a minute particulate wax component (I) and a very small quantity of moisture (J) at a specific rate to be foamed urethane containing contributed wax minute particles.

34. In the same field of endeavor of urethane molding, Nakamura et al teach said two-component reaction curing type urethane liquid resin (D) [0207] with a minute

particulate wax component (I) [0168] and a very small quantity of moisture (J) at a specific rate to be foamed urethane containing contributed wax minute particles [0168].

35. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine Nakamura's addition of wax and moisture in the Kazunori method for the benefit of using fillers as additives to control the properties of the material.

36. Regarding claim 25, Kazunori and Nakamura remain as applied in claim 24, and while Kazunori does not explicitly teach a precious molding method by a lost wax method characterized by using said hollow model manufactured by a method for manufacturing a hollow model according to claim 24, it would have been obvious to use the hollow model for such a purpose. An example of this use is shown by Viteriku et al in JP 2000-210755 (investment casting, abstract and [0005]).

37. Regarding claim 26, Kazunori and Nakamura remain as applied in claim 7, and while Kazunori does not explicitly teach a precious molding method by a lost wax method characterized by using said hollow model manufactured by a method for manufacturing a hollow model according to claim 7, it would have been obvious to use the hollow model for such a purpose. An example of this use is shown by Viteriku et al in JP 2000-210755 (investment casting, abstract and [0005]).

### ***Conclusion***

38. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

39. 2002/0144515 to Zieverink teaches a method of using lost wax process in precious molding.
40. 2001/0041233 to Rusche teaches the molding of polyurethane composite articles using similar techniques and composition to the instant specification.
41. 5,223,193 to Bianchin et al teaches the molding of polyurethane composite articles using similar techniques and composition to the instant specification

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JACOB T. MINSKEY whose telephone number is (571)270-7003. The examiner can normally be reached on Monday to Friday 7:30-5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Angela Ortiz can be reached on 571-272-1206. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JTM

***/Angela Ortiz/  
Supervisory Patent Examiner, Art Unit 4151***